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Dynamic properties of medium and electron transfer reactions in the liquid phase

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Abstract

A modification of the existing approaches to the description of electron transfer in the liquid phase is considered. In this modification, the structure-dynamic parameters of solutions, such as correlation times of all species in solution, are more completely taken into account. The relations between electron transfer probability Wif on the one hand and effective correlation time τeff and reorganization energy Er on the other is analyzed. The degree to which various background electrolytes affect the Wif values for the Fe2+/Fe3+, Co2+/Co3+, and V2+/V3+ redox pairs is estimated. A qualitative model taking into account the wave nature of the electron in describing electron transfer reactions is suggested.